**Supply and/or Design of Centrifugal Contactors and Associated Control System – Draft Specification**

This draft specification is subject to change based on engagement with the supply chain.

NNL require the supply of centrifugal contactors and the associated control system to support a multi-stage centrifugal contactor rig for a solvent extraction flowsheet. The general requirements for the centrifugal contactors and control system are summarised below.

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| **Requirement** | **Assumptions / Limits** |
| Maximum number of stages | 64 |
| Rotor diameter | Between 1 – 2 cm |
| Rotor speed control | The rig must provide control of the rotor speed for each individual stage. It must provide accurate and stable control of the rotor speed during operation. It would be beneficial to provide a readout of the rotor speeds so that this can be checked by operators. |
| Total throughput (aq + org) | The contactors must be capable of operating over a range for flow rates. It is expected that the normal operating range will be between 2 ml/min to 15 ml/min (120 ml/hr to 900 mml/hr) |
| Flexible configuration of centrifugal contactors | The centrifugal contactors need to allow operators to change the point at which feeds are introduced and products removed. (i.e to provide the capability to change the number of stages in specific sections of the flowsheet.) |
| Compatibility with chemicals | The materials of construction must be compatible with a range of aqueous and organic feed solutions. For the purpose of this initial expression of interest it can be assumed that the aqueous feeds will be in nitric acid solutions of the following composition: * Nitric acid solutions (up to 8 M nitric acid)

The organic feeds will be either:* Odourless kerosene (OK)
* 30 % (v/v) tri-n-butyl phosphate (TBP) in OK.
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| Operating environment | The centrifugal contactors will need to be installed in an inert atmosphere glovebox (the installation will be carried out by NNL). Therefore, they will need to be capable of operating in a nitrogen or argon atmosphere. It should be noted that the controller will not be installed in the glovebox and there is no requirement for the controller to operate in an inert atmosphere. |